



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/686,370	10/12/2000	Masashi Saito	07553.0010	4800

22852 7590 02/08/2005

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER

KACKAR, RAM N

ART UNIT PAPER NUMBER

1763

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/686,370	Applicant(s) SAITO ET AL.	
	Examiner Ram N Kackar	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25,27-38 and 46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25,27-38 and 46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2 Claim 25, 27, 32, 34 – 38 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara (JP 09251981 A) in view of William Baerg (US 3854443).

Kurihara et al disclose independent gas flow systems comprising, primary gas flow (Fig 5, 111 or 112), circulating gas flow (107), means of controlling conductance and in turn flow (Fig 5 112 and 108), both through plurality of holes (Fig 5 302), a vacuum apparatus (303 and 106) and constancy of density and hole radius for primary gas supply constant over the surface where holes exist (Fig 5-302), buffer space above primary and circulating holes (Fig 5- 302), means for filtering circulating gas (Fig 1- 113) and primary and circulating gas supply systems connected (Fig 8) as claimed in claim 25.

Kurihara et al however do not expressly disclose primary and circulating gas systems connected with each other via piping having flow control means.

William Baerg discloses independent flow systems at the showerhead (Fig 3) and discloses that independent zones could be connected up stream (Fig 8) so that a zone which would be normally connected to one gas line could be connected to other gas line if needed. For

Art Unit: 1763

example zone 51 would be normally connected to 41 but could be connected to 40 also through valve 29.

Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to provide mechanism as per the teaching of William Baerg to connect the primary and circulation lines through valve so as to have the flexibility of using circulating holes for primary gas as well as circulating gas.

Regarding claim 32 adjustments of conductance by adjusting area of circulating gas supply holes in order to achieve target flow without increasing back-pressure would be obviously needed to maintain the integrity of the vacuum system. This concept has been taught in Kurihara (Para 12 and other places in the document) also.

Regarding claims 34, 37 and 38 are intended use claims and the claimed use is supported by the structure disclosed.

Regarding claim 46 the newly added limitation over the limitations of claim 25 is an intended use limitation capable of being performed by the structure disclosed and hence carries no additional patentable weight.

3 Claims 28, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara (JP 09251981 A) in view of William Baerg (US 3854443) as applied to claims 25, 27 and 32- 38 and further in view of Moslehi et al (US 5453124).

Kurihara et al disclose independent gas flow systems comprising, primary gas flow (Fig 5, 111 or 112), circulating gas flow (107), means of controlling conductance and in turn flow (Fig 5 112 and 108), both through plurality of holes (Fig 5 302), a vacuum apparatus (303 and 106) and constancy of density and hole radius for primary gas supply constant over the surface

Art Unit: 1763

where holes exist (Fig 5-302), buffer space above primary and circulating holes (Fig 5- 302), means for filtering circulating gas (Fig 1- 113) and primary and circulating gas supply systems connected (Fig 8) as claimed in claim 25.

Kurihara et al however do not expressly disclose circulating gas supply holes greater or the total area larger.

Moslehi et al teach a programmable multizone gas injector where injector parameters could be varied in any number of ways (Abstract, Fig 1 and Col 7 lines 22-29). Thus the number of holes or the area of holes, in a zone could be made higher or lower compared to another zone depending upon process requirement.

Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to replace the shower head of Kurihara with the one of Moslehi et al with higher circulating gas holes, so as to make both primary and circulating gases flow evenly on the substrate with required circulating gas with higher conductance.

4 Claims 29 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara (JP 09251981 A) in view of William Baerg (US 3854443) as applied to claims 25, 27 and 32- 38 and further in view of Umotoy et al (US 6086677).

Kurihara et al disclose independent gas flow systems comprising, primary gas flow (Fig 5, 111 or 112), circulating gas flow (107), means of controlling conductance and in turn flow (Fig 5 112 and 108), both through plurality of holes (Fig 5 302), a vacuum apparatus (303 and 106) and constancy of density and hole radius for primary gas supply constant over the surface where holes exist (Fig 5-302), buffer space above primary and circulating holes (Fig 5- 302),

Art Unit: 1763

means for filtering circulating gas (Fig 1- 113) and primary and circulating gas supply systems connected (Fig 8) as claimed in claim 25.

Kurihara et al however do not expressly disclose primary and secondary holes density and radius are constant over entire surface.

Umotoy et al disclose a supply system for two independent gases (Fig 1-116,118) where gases enter the processing chamber through a showerhead so that the holes are inter spread and both primary and secondary holes density and radius are constant over entire surface (Fig 1-148).

Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to replace the showerhead of Kurihara with the one of Umotoy et al so as to make both primary and circulating gases flow evenly on the substrate.

Response to Amendment

Applicants arguments filed 12/28/2004 have been considered but not found to be persuasive.

Regarding the combination of Kurihara in view of William Baerg, applicant argues that there is no suggestion or motivation in the prior art to combine reference teachings to arrive at the claimed invention. Further applicant argues that the motivation proposed by the Examiner is nowhere found in the prior art.

This argument is not persuasive since in Fig 8 gas distribution schematic discloses built in flexibility to connect one or two gases to same point of use. The teaching is implicit in the

Art Unit: 1763

drawing, as one of ordinary skill in the art when looking at the schematic can easily comprehend various flow combinations possible with the piping and valve connections disclosed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 571 272 1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

✓
RK


S. KACKAR
TECHNICAL STAFF